

THE EFFECTS OF ANXIETY AND ATTENTIONAL FOCUS ON SEXUAL RESPONDING—II

COGNITIVE AND AFFECTIVE PATTERNS IN ERECTILE DYSFUNCTION*

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Summary—The present report reviews several cognitive and affective dimensions of responding during an anxiety-producing performance demand and two forms of attentional focus in sexually dysfunctional and functional men. Measures of focused attention, thought content, affective state, perceptions of concordance between tumescence and subjective states of arousal and a personality measure of self-consciousness were administered in conjunction with the four experimental conditions described in the previous report. The results indicate several dimensions of difference between the sexually dysfunctional and functional samples. Dysfunctional *Ss* were more likely to report diminished affective involvement, more attention to internal thoughts, sensations and feelings, a perception that physiological and subjective measures of arousal were poorly correlated and to score lower on public self-consciousness, relative to functional controls. The results are discussed in the context of defining relevant 'anxiety' and distraction processes occurring in sexual dysfunction and implications for treatment are proposed.

INTRODUCTION

As noted by Beck and Barlow (1986, this issue, pp. 9–17), the concept of sexual performance anxiety has received considerable experimental attention as a result of the theoretical advances of Masters and Johnson (1970). One important consequence of this is the growing accumulation of findings indicating that 'anxiety' in this context may be more concisely described as a high frequency of distracting, intrusive thoughts that draw the dysfunctional male's attention away from arousing cognitions and fantasies (Beck and Barlow, 1984). More specifically, heightened autonomic arousal does not appear to influence significantly the dysfunctional male's genital responding (Beck, Barlow, Sakheim and Abrahamson, 1985), whereas cognitive interference appears to produce reduced tumescence (Beck, Barlow and Sakheim, 1983).

In this respect, the relevant maintaining processes in erectile dysfunction resemble similar processes in the social and evaluation phobias. For example, high test-anxious students have been reported to set lower levels of aspiration for themselves (Trapp and Kausler, 1958), feel less confident (Meunier and Rule, 1967) and demonstrate more self-blame for their performance level (Doris and Sarason, 1955), relative to low test-anxious individuals. Detailed laboratory information suggests that cognitive interference is cardinal in lowering test performance and in maintaining this disturbance (e.g. Sarason and Stoops, 1978; Sarason, 1982). The nature of this interference is a high frequency of negative thoughts concerning potential failure, combined with an affective state resembling helplessness, or a perceived inability to predict, control and obtain desired results (e.g. Sarason, 1978; Schlenker and Leary, 1982). Often, there are perceptual corollaries to this anxiety process, including distortions in the perception of time (e.g. Sarason and Stoops, 1978) and underestimations of the quality of one's own performance (e.g. Clark and Arkowitz, 1975). While the experimental data on evaluation anxiety have addressed slightly different questions than the literature on sexual dysfunction, the analogy of cognitive interference comprising the central component of 'anxiety' is close in these two disorders.

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Several recent studies with sexually functional *Ss* provide additional insight into the nature of cognitive-attentional processes relevant for adequate sexual responding and expand the parallels between sexual dysfunction and evaluation phobia. Sakheim, Barlow, Beck and Abrahamson (1984) examined the availability of genital focus on subjective and physiological responding. In two experimental sessions, male *Ss* were shown erotic films varying in arousability. In one session, the *S* was not allowed to view his genital responding, while in the second session, he was allowed to visually attend to his tumescence. At low and moderate levels of responding, *Ss* showed less tumescence when genital cues were visually available. In contrast, during high levels of excitement, visual feedback resulted in greater tumescence. These data suggest that a positive visual feedback loop is important in facilitating and maintaining responding in normal men, provided that adequate arousal exists. The converse could hold true for dysfunctional men; that is, under conditions of low arousal, a negative feedback system could operate to perpetuate diminished responding by fulfilling negative expectations.

Referring again to the literature on evaluation anxiety, a similar study (Carver, Peterson, Follansbee and Scheier, 1983) has demonstrated that self-directed focus differentially influences the performance of high and low test-anxious students. Self-focus increased the performance of low-anxious individuals on an anagram task, while impairing performance for *Ss* high in test anxiety. While comparison of these two studies lacks methodological control, the implication of these findings is that performance is worsened by feedback, but only in the case of the 'anxious' individual. Feedback to persons untroubled by performance concerns apparently facilitates responding, although no data exist to confirm the exact role of a positive feedback system at work in creating this effect.

A related series of investigations provides more detailed information concerning these attentional processes. Beck *et al.* (1983) explored self- vs partner-directed attention in conjunction with three levels of stimulus partner arousal (high, low and unknown). The results suggest that for sexually dysfunctional men, self-directed attention in the presence of a highly aroused stimulus partner is more arousing than partner-directed attention. These *Ss* reported that in actual sexual situations, a highly aroused partner creates a perceived 'demand' for performance, which is experienced as threatening and anxiety-producing. Sexually functional men in contrast achieved maximal responding during partner focus, especially when she was perceived as highly aroused, and reported that in actual situations, this type of focus provides important feedback concerning their own responding. An extended partial replication of this study using audiotapes to deliver the experimental manipulations to functional *Ss* again revealed that partner focus resulted in higher levels of responding (Abrahamson, Barlow, Beck, Sakheim and Kelly, 1985).

These reports have their corollaries in the social anxiety literature. A number of studies have indicated that chronic public self-consciousness, defined as an increased awareness of one's social behavior as it impacts upon others, is associated with impaired social functioning, specifically shyness (Cheek and Buss, 1982), anxiety over the presence of an audience (Leary, 1983) and reticence (Jones and Russell, 1981). What this parallel suggests is that performance is impaired for the socially anxious individual when attention is focused on a source of potential response feedback. While there is a notable dearth of data on this topic, it appears as if increased attention to any source which may provide appraisal of one's performance acts to distract the evaluation anxious individual from a cognitive focus that would facilitate his performance, possibly by increasing the saliency of distracting, self-depreciatory thoughts.

When viewed in this perspective, 'anxiety' must be defined in a multidimensional fashion, extending beyond a conditioning or behavioral skills model (cf. Bandura, 1977). More specifically, 'anxiety' can be viewed as a cognitive process that includes information processing style, thought content, and perceptions of behavior and physiology. This cognitive process has some important influences on affective states. One consequence of this anxiety process for sexual arousal is a disruption of adequate functioning through a distraction mechanism. In the case of test evaluation anxiety, careful empirical documentation exists to support this definition (e.g. Sarason, 1982). Given that the analogy between sexual inadequacy and social phobia appears strong, the need for similar data on cognitive and affective processes in sexual dysfunction is clear. Additionally, while distraction may be the mechanism through which sexual performance is disrupted, a more careful exploration of affective and perceptual corollaries would yield important information concerning

issues such as sexual desire, perceptions of the probability of control over responding and other motivational processes.

The present investigation reports information on cognitive and affective functioning in the context of an experimental manipulation of performance demand and attentional focus. Two groups of men, a sample of men experiencing secondary erectile dysfunction of psychogenic origin, and an age-matched control sample, served as Ss. Performance demand was experimentally manipulated through presence and absence of shock threat contingent on adequate arousal, while sensate and spectator focus instructions were delivered after training and practice. All Ss experienced the four conditions simultaneous with erotic videotapes in a repeated-measures design. Physiological data from this experiment are presented in Beck and Barlow (1986). The present report describes cognitive and affective differences between sexually functional and dysfunctional Ss as a result of these experimental manipulations.

METHOD

Subjects

Two groups of 12 Ss each were included: a sample of men experiencing secondary erectile dysfunction and an age-matched control group. A complete description of the Ss is provided in Beck and Barlow (1986).

Measures

Between-condition questionnaire. Ss completed a brief questionnaire following each film presentation. This contained items to assess attentional focus during the preceding presentation, a thought-listing task and affective ratings. Ss were first asked to report the relative percentage of attention they allocated to their sensations as opposed to their physical responding, to describe specific features that they had attended to and to explain what effect they perceived this focus as producing. For the thought-listing task, Ss were asked "to list as many thoughts as you can recall occurring during the preceding film". The confidentiality of these responses was restated and Ss were told to take several minutes to complete the task. The choice of open-ended instructions was based upon the guidelines of Cacioppo and Petty (1981) which suggest that this format minimizes experimental demand and provides the least restrictive approach for assessing thought content. This task was administered after the film to reduced distraction.

The final section of this questionnaire contained 11 affective adjectives, selected from the Multiple Affect Adjective Checklist (MAAC; Zuckerman and Lubin, 1965). Ss were asked to check those descriptors which best reflected their mood during the preceding stimulus. The list included states such as depressed, detached, anxious, angry and disinterested. The use of an abbreviated list of adjectives was required, based on time constraints.

Postsession interview. A semi-structured interview was used to debrief Ss after the experimental session. During this interview, Ss were asked about their experience with the two forms of attentional focus during the experimental procedure (e.g. "Was it difficult for you to focus upon your physical responses?") as well as in actual sexual encounters (e.g. "During sexual situations, what effect does attending to your sensations and fantasies have?"). Additionally, perceptions of the degree of correspondance between subjective arousal and tumescence were assessed using a close-ended series of questions.

Personality measure. A measure of individual differences in self-consciousness was given to all Ss (Fenigstein, Scheier and Buss, 1975). This scale contains 23 items rated on a scale of 0 (extremely uncharacteristic) to 4 (extremely characteristic). Factor analysis in the initial scale development produced three subscales: Private Self-consciousness, a measure of attention to one's inner thoughts and feelings; Public Self-consciousness, defined by a general awareness of the self as a social object; and Social Anxiety, a measure of discomfort in the presence of others. The scale has good test-retest reliability and a stable factor structure (Buss, 1980). Preliminary analyses suggest that public and private self-consciousness are separate but interrelated constructs, correlating moderately (e.g. $r = 0.23 - 0.26$ in the original validation report) but tapping separate aspects of self-awareness.

Procedure

Subjects were administered the Self-consciousness Inventory prior to the beginning of the experimental session. Following the determination of tolerance levels for electrical shock, the *S* placed the strain gauge and the electrodes were attached. The experimenter introduced the between-condition questionnaire at this time, explaining that following the offset of each stimulus film, the *S* would be asked to complete this 2-page form. The *S* was asked to read the form and any questions were answered. The experimenter provided the following explanation of the thought-listing procedure:

"As you can see, you're going to be asked to write down any thoughts that you can recall having during each film. Try to be candid and remember that your answers will be kept strictly confidential. Only write down thoughts after the film is over."

Additionally, the experimenter briefly explained the affective ratings and provided instructions concerning the attentional focus and performance demand procedures before leaving the *S* alone in the experimental chamber.

The *S* was presented with four experimental conditions: presence or absence of contingent shock threat, crossed with instructions to attend either to tumescence or internal sensations of sexual arousal. For a complete description, see Beck and Barlow (1986).

After establishing stable physiologic signals, a 5-min habituation period was begun, followed by a neutral travelogue to control for stimulus-orienting responses. Four moderately arousing, explicit erotic films were utilized as stimuli. These had been previously equated and contained 3 min of heterosexual foreplay. Order of presentation was counterbalanced across *S*s and pairing of films and experimental instructions were randomized. Each *S* viewed the four stimuli in a repeated-measures design, with adequate baselines between presentations to allow for completion of the between-condition questionnaire and to ensure return to basal levels of physiological responding.

Following the experimental session, the *S* was debriefed by the experimenter, using the postsession interview. After assessing his perceptions of the effects of attentional focus and comments concerning the concordance of the physiological and subjective measures, the *S* was debriefed to determine his belief in the experimental manipulation and to explain the deception.

Data scoring

The Self-consciousness Inventory was scored according to guidelines provided by the authors. Thought-listing data were scored by two independent raters, using a coding system designed for the present investigation. This contained eight discrete categories, developed in a pilot investigation: (1) evaluative thoughts related to spectator focus; (2) nonevaluative thoughts related to spectator focus; (3) evaluative thoughts related to sensate focus; (4) nonevaluative thoughts related to sensate focus; (5) thoughts about the film; (6) thoughts about shock threat; (7) thoughts unrelated to experimental participation; and (8) uncodable thoughts. Raters were trained to 80% agreement on pilot data prior to scoring protocols. Interrater agreement was calculated by the formula $\% \text{ agreement} / (\% \text{ agreement} + \% \text{ disagreement})$, where an agreement was defined as both raters coding a statement in the same category. Interrater reliability was 82% for the thought-listing data. Disagreements were resolved by the use of an independent third rater. Following coding, data were reduced to percentage of occurrence per category per *S*, to permit statistical analyses by establishing additivity of error components and satisfying assumptions of homogeneity and error independence (Fleiss, 1981). This approach to scoring is similar to that used by Horowitz (e.g. Horowitz, 1969; Horowitz and Becker, 1971, 1973) in stress research and appears psychometrically sound.

Owing to the use of an abbreviated affect scale, validated scoring procedures could not be employed for the affect ratings. The data were scored as frequencies, by group.

RESULTS

Between-condition questionnaire

Data from questions assessing relative percentage of focused attention are presented in Table 1. These data were analyzed with tests for independent samples, owing to their dichotomous nature

Table 1. Attentional focus, following each condition, by group

	Functional Ss			Dysfunctional Ss		
	Thoughts, sensations or feelings	Physical responding (tumescence)	Other	Thoughts, sensations or feelings	Physical responding (tumescence)	Other
Shock threat under sensate focus	9	1	2	7	1	4
No shock threat under sensate focus	8	1	3	7	1	4
Shock threat under spectator focus	0	10	2	2	3	7
No shock threat under spectator focus	1	9	2	0	6	6

and given the experimental focus on group contrasts in attentional focus under each condition. As can be seen, during both sensate focus conditions, the majority of Ss in each group reported attending to sexual thoughts, feelings and sensations. Under spectator focus instructions, however, a surprising pattern emerged. While functional Ss reported directed attention to tumescence, the sexually dysfunctional sample was less focused, especially in the presence of shock threat. A significant group difference was noted during shock threat under spectator focus instructions ($\psi^2_{\text{obs}} = 8.52$; $df = 2$; $P < 0.05$). Dysfunctional Ss reported significantly less focus on tumescence, despite experimental instructions, relative to the control sample. Only 3 of 12 sexually dysfunctional Ss reported focusing on their physical responses during shock threat under spectator focus instructions, whereas 7 other Ss stated that they found themselves attending to the couple in the film. This anomaly is especially significant in the context of physiological patterns of responding. As reported in Beck and Barlow (1986), dysfunctionals achieved relatively high levels of arousal during the shock threat under spectator focus conditions, in contrast with responding during the other instructional sets. Their failure to attend to physical responding is thus especially salient.

Data from the thought-listing procedure were transformed to percentage of total occurrence scores for each S and analyzed with a repeated-measures ANOVA [group (2) \times condition (5) \times coding category (8)]. A significant group \times category effect emerged [$F(7,54) = 3.32$; $P < 0.01$]. Duncan follow-up tests indicated a complex pattern of differences, which are shown in Table 2. Irrespective of experimental instruction, sexually dysfunctional Ss reported a significantly higher percentage of nonevaluative thoughts related to spectator focus, relative to the control Ss ($P < 0.05$). Functional Ss, in contrast, reported a significantly higher percentage of thoughts about the film ($P < 0.05$) relative to dysfunctional Ss.

Data from the poststimulus affect ratings are shown in Table 3. Unfortunately, statistical analyses were not possible, owing to the use of an abbreviated version of the affect checklist. As can be seen in Table 3, during the shock threat under sensate focus condition, sexually functional Ss reported more frequent feelings of involvement and interest, relative to dysfunctional Ss. In contrast, under no shock threat under sensate focus instructions, dysfunctional Ss reported more frequent depression and diminished interest. Instructions to spectator focus produced a different

Table 2. Mean percentage of thoughts by category and group

	Dysfunctional Ss	Functional Ss
Thoughts related to spectator focus:		
1. Evaluative	2.08 ^{4,5}	2.58 ^{4,5}
2. Nonevaluative	16.83— $P < 0.05$ —3.99 ⁴	
Thoughts related to sensate focus:		
3. Evaluative	7.22 ^{4,5}	0.28 ^{4,5}
4. Nonevaluative	26.09	20.93
5. Thoughts about the film	21.87— $P < 0.05$ —43.43	
6. Thoughts about shock threat	0.57 ^{4,5}	4.28 ^{4,5}
7. Thoughts unrelated to experimental participation	11.17 ⁵	14.12 ⁵
8. Uncodable (residual)	2.49 ^{4,5}	5.33 ^{4,5}

Within-group comparisons: ⁴significantly different from category 4, $P < 0.05$; ⁵significantly different from category 5, $P < 0.05$.

Table 3. Frequency of affective states, poststimulus, by group

	Shock threat under sensate focus		No shock threat under sensate focus		Shock threat under spectator focus		No shock threat under spectator focus	
	D	F	D	F	D	F	D	F*
Depressed	0	1	8	0	1	0	0	8
Disinterested	2	2	2	3	3	2	0	4
Anxious	1	4	2	5	3	6	2	3
Angry	1	2	0	0	0	0	1	0
Calm	4	3	4	4	6	2	5	5
Involved	4	9	7	5	6	6	4	5
Worried	0	1	0	1	0	2	0	0
Relaxed	4	6	6	3	4	3	4	3
Detached	2	3	1	3	3	3	2	2
Interested	5	9	6	10	6	9	6	8
Happy	4	3	1	4	3	2	3	8

*D = dysfunctionals, F = functionals.

affective pattern; during shock threat, fewer functional Ss reported feeling calm, while during no shock threat, this group reported an increase in depression and disinterest.

Postsession interview

Several aspects of the postsession responses are included in this measure. First, Ss were asked about their perceptions of the degree of correspondence between the strain gauge and subjective rating lever. Eleven of the 12 functional control Ss indicated that they felt there was a high relationship between these two measures. In contrast, only 4 members of the sexually dysfunctional group indicated that their physiological and subjective arousal was well correlated. In actuality, as reported in Beck and Barlow (1986), group differences in concordance between these two measures were small and statistically nonsignificant. When asked which form of attentional focus produced the highest correspondence between physiological and subjective measures, 7 sexually functional Ss and 7 dysfunctional Ss indicated that this occurred under spectator focus. In actuality, correlations under spectator focus were somewhat higher ($r = 0.63$) relative to sensate focus instructions ($r = 0.51$).

Personality measure

Separate *t*-tests were conducted on each subscale of the Self-consciousness Inventory, to examine differences between the functional and dysfunctional groups. A significant contrast was found for the Public Self-consciousness subscale [$t(22) = -2.01$, $P < 0.05$], indicating that dysfunctional Ss reported lower levels of this factor relative to the control Ss. The two groups did not significantly differ on the Private Self-consciousness and Social Anxiety subscales.

DISCUSSION

The present investigation explored several aspects of cognitive and affective functioning during an anxiety-producing performance demand and attentional focus and allows comparisons of responses from a sexually dysfunctional sample with those from age-matched control Ss. One of the more salient findings is the dysfunctional sample's reports of a higher frequency of thoughts involving nonevaluative spectator focus, relative to the sexually functional sample. Irrespective of experimental condition, the clinical group reported increased awareness of their genital responding, although surprisingly, this was not accompanied by self-evaluation. This report supports, in part, the hypotheses stated above concerning the important role of self-observation in distracting the dysfunctional male from thoughts and fantasies that would be arousing. However, unlike the social and evaluation phobic, the dysfunctional males in this report did not 'judge' themselves in conjunction with this increased awareness of their tumescence. Thus, while the analogy with these phobias is close, in some respects, the dysfunctional male appears to function in a more emotionally distanced fashion from his reduced performance, relative to the test anxious individual. In contrast with dysfunctional males, the control sample reported a significantly higher frequency of focus on the erotic stimuli and did not appear preoccupied with their performance.

Examination of the affective ratings proves interesting in light of this cognitive pattern. The sexually dysfunctional sample generally reported lower frequencies of emotional states across all experimental conditions. Specifically, during the two sensate focus conditions, this group reported lower levels of interest and in the absence of shock threat, greater reports of depression. In contrast, the functional group demonstrated a similar pattern of depression and disinterest during the spectator focus under the no shock condition. The generally diminished affective responding of the dysfunctional sample is salient in light of increased cognitive attention to their tumescence. Clearly, these data suggest that the dysfunctional male may be emotionally distanced not only from sexual feelings but from other forms of affect as well. This speculation deserves careful follow-up using more refined experimental paradigms to explore affective states simultaneous with physiological responding. It would appear that an awareness of feeling states feasibly could significantly affect genital arousal, either in a causative fashion or as a corollary to tumescence.

Another interesting aspect of these data is the dysfunctional Ss' perception of reduced correspondance between measures of tumescence and subjective arousal. While no significant discrepancies occurred between the two groups in actual correlation values, the majority of the sexually dysfunctional S felt that there was minimal relationship between objective and subjective arousal. In light of the diminished pattern of affective responding demonstrated by these Ss, this misperception of response concordance is striking and suggests that the dysfunctional male may underestimate his internal, affective responding. A related investigation (Beck, Barlow and Sakheim, 1982) examined voluntary suppression of arousal to a range of stimulus modalities and elaborates upon this speculation. In this report, dysfunctional men showed diminished correlations between tumescence and subjective arousal under suppression instructions during all stimulus modalities (films, audiotapes and still slides), whereas functional Ss demonstrated this pattern only during film presentations. When asked, dysfunctional Ss perceived themselves as unable to voluntarily suppress and control tumescence, although on objective measures, there were no differences between clinical and nonclinical response patterns. The dysfunctional sample additionally was not able to state any cognitive strategies that were helpful for voluntarily suppressing arousal, in contrast with the functional sample's highly detailed reports of specific self-control mechanisms. In certain respects, these differences resemble a form of motivational 'helplessness', in that dysfunctional males report a perception of lack of control over sexual responding, which coupled with selective inattention to subjective experience appears to maintain a distanced cognitive perspective on sexual arousal.

In light of these observations, it is somewhat surprising that the clinical sample scored lower on a measure of public self-consciousness, indicating that they held fewer concerns over themselves as social agents. What this may reflect is a general focus on their own behavior, much as this group reported a greater emphasis on spectator focus of their sexual responding. Possibly, this heightened self-awareness reduces attention to the interpersonal and social aspects of sexuality, in a fashion like that discussed by Duval and Wicklund (1972). According to this framework, attention can be characterized as 'objective' (focused inward on the self) or 'subjective' (directed towards external objects). These authors postulate that attention cannot be focused simultaneously on an aspect of the self and on a feature of the environment. If this is accurate, then the heightened self-awareness shown by the dysfunctional group precludes awareness to social protocol. The lack of group differences on measures of private self-consciousness and social anxiety suggests that while performance fears may be one of the operative distractors in erectile dysfunction, this sample does not display heightened concerns about their social behavior across situations.

Phenomenological reports, collected after each condition, provide interesting elaboration on these speculations. Ss were asked to describe what they were attending to during preceding presentation and how this focus affected their arousal. Under sensate focus instructions, sexually functional Ss generally reported identification with the man in the film, heightened attention to the actress' behavior, and awareness of a desire to participate. In contrast, dysfunctional Ss were much less descriptive in their reports, which were frequently asexual (e.g. "I felt hungry"). During spectator focus, the two groups were more similar in their stated focus, with the dysfunctional group reporting more identification with the male actor and fewer asexual affective statements. It thus appears that while the dysfunctional sample was more self preoccupied, they were not as able to articulate of their cognitive and emotional states as the control Ss.

In sum, this report suggests several dimensions of differences which help to clarify relevant maintaining factors in erectile dysfunction. Relative to the sexually dysfunctional sample, functional Ss were more likely to report affective involvement, greater attention to the stimuli, perceptions of concordance between subjective and objective indices of arousal, and greater awareness of themselves as social objects. Dysfunctional men, in contrast, reported fewer affective states and more attention to thoughts, sensations and feelings. Oddly, this greater allocation of internally-directed attention is affectively distanced and seems to remove the man from effective emotional involvement. While the present investigation is unable to determine whether this process is a cause or effect of impaired sexual functioning, it does appear that excessive cognitive attention to performance is a cardinal feature of sexual dysfunction, coupled with affective blunting.

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